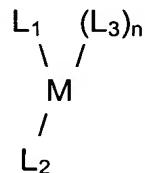


What is claimed is:

1. A catalyst system comprising:
 - a) a group 4 organometallic catalyst having at least one halide ligand;
 - b) a solid zirconium acid component; and
 - c) a metal alkyl.
2. The catalyst system of claim 1 wherein said group 4 organometallic catalyst is characterized by having at least one cyclopentadienyl ligand.
3. The catalyst system of claim 2 wherein said group 4 organometallic catalyst is defined by the formula:



wherein M is selected from titanium, hafnium and zirconium; L₁ is selected from the group consisting of cyclopentadienyl and L₂ is selected from the group consisting of cyclopentadienyl and substituted cyclopentadienyl, and L₃ is selected from the group consisting of cyclopentadienyl substituted cyclopentadienyl and heteroatom ligands; each L₃ is an activatable ligand and n is 1 or 2.

4. The catalyst system of claim 3 wherein L₂ is selected from the group consisting of phosphinimine and ketimide ligands.

5. The catalyst system of claim 1 wherein said solid zirconium acid comprises zirconium, oxygen and at least one of sulphur or phosphorus.

6. The catalyst system of claim 5 wherein said solid zirconium acid is prepared by reacting 1) at least one zirconium complex selected from the group consisting of:

zirconium acetate, zirconium acetate hydroxide, zirconium basic carbonate, zirconyl chloride, zirconium hydrogenphosphate, zirconium hydroxide, zirconium sulfate, zirconyl nitrate;

with 2) at least one selected from the group consisting of: fluorophosphoric acid, monosodium fluorophosphates, disodium fluorophosphate, trifluoromethane sulfonic acid, phosphoric acid, and sulfuric acid

7. The catalyst system of claim 1 wherein said catalyst system is deposited upon a particulate support.

8. The catalyst system of claim 1 wherein said metal alkyl is a hydrocarbyl aluminum defined by the formula:

$Al (R)_m(OR)_n(X)_p$ wherein

R is a hydrocarbyl group,

X is a halide, and

$m+n+p = 3$;

with the proviso that m is at least 1.

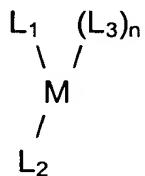
9. The catalyst system of claim 8 wherein said hydrocarbyl aluminum is selected from the group consisting of triethyl aluminum and triisobutyl aluminum.

10. A process for the polymerization of olefins in the presence of a catalyst system comprising:

- a) a group 4 organometallic catalyst having at least one halide ligand;
- b) a solid zirconium acid component; and
- c) a metal alkyl.

11. The process of claim 10 wherein said group 4 organometallic catalyst is characterized by having at least one cyclopentadienyl ligand.

12. The process of claim 11 wherein said group 4 organometallic catalyst is defined by the formula:



wherein M is selected from titanium, hafnium and zirconium; L₁ is selected from the group consisting of cyclopentadienyl and L₂ is selected from the group consisting of cyclopentadienyl and substituted cyclopentadienyl, and L₂ is selected from the group consisting of cyclopentadienyl substituted cyclopentadienyl and heteroatom ligands; each L₃ is an activatable ligand and n is 1 or 2.

13. The process of claim 12 wherein L_2 is selected from the group consisting of phosphinimine and ketimide ligands.

14. The process of claim 10 wherein said solid zirconium acid comprises zirconium, oxygen and at least one of sulphur or phosphorus.

15. The catalyst system of claim 14 wherein said solid zirconium acid is prepared by reacting 1) at least one zirconium complex selected from the group consisting of:

zirconium acetate, zirconium acetate hydroxide, zirconium basic

carbonate, zirconyl chloride, zirconium hydrogenphosphate,

zirconium hydroxide, zirconium sulfate and zirconyl nitrate,

with 2) at least one reagent selected from the group consisting of:

fluorophosphoric acid, monosodium fluorophosphate, disodium

fluorophosphate, trifluoromethane sulfonic acid, phosphoric acid and

sulfuric acid.

16. The process of claim 10 wherein said catalyst system is deposited upon a particulate support.

17. The process of claim 10 wherein said metal alkyl is a hydrocarbyl aluminum defined by the formula:

$Al (R)_m(OR)_n(X)_p$ wherein

R is a hydrocarbyl group,

X is a halide, and

$m+n+p = 3;$

with the proviso that m is at least 1.

18. The process of claim 17 wherein said hydrocarbyl aluminum is selected from the group consisting of triethyl aluminum and triisobutyl aluminum.